

WHAT IS CLAIMED IS:

1. An exchanger, comprising:

an outer casing having an inlet port and an outlet port for a first fluid, and an inlet port and an outlet port for a second fluid;

a bundle of hollow fibers located within the outer casing, and being in flow communication with the inlet and outlet port for the second fluid; and

a central core located in the outer casing and around which the bundle of fibers is arranged, the central core including an inlet manifold connected to the first fluid inlet port, and an outlet manifold connected to the first fluid outlet port.

2. An apparatus as claimed in claim 1, wherein the central core has a substantially elongated tubular shape of predetermined length, and the inlet and outlet manifolds extend along substantially the entire length of the central core.

3. An apparatus as claimed in claim 1, wherein the inlet and outlet manifolds are recessed in the central core.

4. An apparatus as claimed in claim 2, wherein the inlet and outlet manifolds are located in the tubular central core in a substantially diametrically opposed orientation.

5. An apparatus as claimed in claim 1, wherein at least one of the inlet and outlet manifolds includes a central rib having a distal edge.

6. An apparatus as claimed in claim 5, wherein a distal edge of a rib is located below an arc defined by the outside core surface.

7. An apparatus as claimed in claim 1, wherein the outer casing and the central core are sized and shaped to maintain the bundle of fibers at a first density in a region of the blood inlet manifold and at a second density, greater than the first density, in a region radially spaced from the blood inlet manifold.

8. An apparatus as claimed in claim 1, wherein the outer casing and the central core are sized and shaped to maintain the bundle of fibers at a first density in a region of the blood outlet manifold and at a second density, greater than the first density, in a region radially spaced from the blood outlet manifold.

9. An apparatus as claimed in claim 1, wherein the outer casing and the central core are sized and shaped so that the bundle of fibers sandwiched therebetween varies in density, the bundle having a lower density in areas adjacent the inlet and outlet manifolds than in areas spaced from the inlet and outlet manifolds.

10. An apparatus as claimed in claim 1, wherein the outer casing includes an outer tube having a cap disposed on an end thereof, the exchanger further including connecting means for sealing the cap to the outer tube.

11. An apparatus as claimed in claim 10, wherein the connecting means includes an angled flange extending from the outer tube, and the cap includes a groove for receiving a portion of the angled flange.

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12. An apparatus as claimed in claim 10, wherein the cap includes a wall extending substantially parallel to the outer tube, the wall of the cap being spaced from the tube.

13. An apparatus as claimed in claim 10, wherein the cap engages the central core in a press-fit manner.

14. An apparatus as claimed in claim 13, wherein at least one manifold includes an inwardly flared tubular end and the cap includes an outwardly flared tubular fitting that engages the flared tubular end in a press fit manner.

15. An apparatus as claimed in claim 2, wherein the blood inlet and outlet manifolds have a concave shape extending towards a center of the central core.

16. An apparatus as claimed in claim 1, further including a heat exchanger integrally connected thereto.

17. An apparatus as claimed in claim 1, further including a quantity of potting material located at opposite ends of the bundle of hollow fibers for sealing the fibers to each other and for sealing the bundle within the outer casing between the outer casing and the core.

18. An apparatus as claimed in claim 1, wherein the first fluid is blood and the second fluid is oxygen.

19. An exchanger, comprising:

an outer casing having a tubular outer wall and an angled circumferential flange extending therefrom;

a bundle of fibers located within the outer casing;

a central core located in the outer casing and around which the bundle of fibers is arranged; and

a cap located on an end of the outer casing, the cap having a wall extending substantially parallel to the outer wall of the casing and being spaced therefrom, the wall of the cap engaging the angled flange of the outer casing.

20. An apparatus as claimed in claim 19, wherein the wall of the cap includes a circumferential groove that receives a portion of the angled flange.

21. An apparatus as claimed in claim 20, wherein a resin is disposed in the groove.

22. An apparatus as claimed in claim 19, wherein the central core includes a blood inlet port, a blood inlet manifold connected to the blood inlet port, a blood outlet port and a blood outlet manifold connected to the blood outlet port.

23. An apparatus as claimed in claim 19, further including a heat exchanger integrally connected to thereto and having an outlet port which is flow connected to an interior portion of the outer casing.

24. A blood oxygenator, comprising:

an outer casing having an inlet port and an outlet port for blood, and an inlet port and an outlet port for oxygen; a bundle of hollow fibers located within the outer casing, and being in flow communication with the oxygen inlet and outlet ports; and

a central core located in the outer casing and around which the bundle of fibers is arranged, the central core including an inlet manifold connected to the blood inlet port, and an outlet manifold connected to the blood outlet port.

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